

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
22 September 2005 (22.09.2005)

PCT

(10) International Publication Number
WO 2005/086845 A3

(51) International Patent Classification⁷:

C12N 5/00

(21) International Application Number:

PCT/US2005/007704

(22) International Filing Date: 9 March 2005 (09.03.2005)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/552,318 10 March 2004 (10.03.2004) US

(71) Applicant (for all designated States except US): REGENTS OF THE UNIVERSITY OF CALIFORNIA [US/US]; 1111 Franklin Street, 5th Floor, Oakland, CA 94607-5200 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): HAYEK, Alberto [US/US]; 8818 Nottingham Place, La Jolla, CA 92037 (US). BEATTIE, Gillian [US/US]; 2545 Caminito El Rincon #237, San Diego, CA 92130 (US). LOPEZ, Ana [US/US]; 11115 Adriatic Place, San Diego, CA 02126 (US).

(74) Agent: LATIMER, Matthew; Moazzam & Latimer LLP, 1474 North Point Village Center #320, Reston, VA 20194-1190 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:

29 December 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2005/086845 A3

(54) Title: COMPOSITIONS AND METHODS FOR GROWTH OF EMBRYONIC STEM CELLS

(57) **Abstract:** The present invention relates to methods, compositions, and kits for maintenance of the undifferentiated state and/or pluripotency in stem cells, including embryonic stem (ES) cells. It also relates to stem cells that have been maintained in an undifferentiated state. The present invention provides these aspects using culture medium enriched with a TGF β family member protein, an FGF family member protein, and/or nicotinamide, without using fibroblast feeder layers, conditioned media, or leukemia inhibitory factor.